

REMARKS

The Office Action mailed March 27, 2006 has been received and reviewed. By the present Response and Amendment, Applicants have amended Claims 1, 2, 5, and 6, and have added new Claim 8. No new matter has been introduced by virtue of the amendments to Claims 1, 2, 5, and 6 or the addition of new Claim 8.

First, the Office Action rejected Claims 1, 3 and 4 under 35 U.S.C. 103(a) "as being unpatentable over Mishin et al., Patent No. 5,744,929, in view of Tanabe, Patent No. 5,381,072. In support of this rejection of Claims 1, 3 and 4, the Office Action notes that Mishin discloses an injector, an electromagnetic drive subsystem, a first accelerating section, a second accelerating section, and a waveguide connected to said electromagnetic drive subsystem and at least partially physically interposed between said first and second accelerating section. The Office Action also notes that Mishin et al. does not disclose a tube connected to and extending between said first accelerating section and said second accelerating section. Because Mishin does not disclose such a tube, the Office Action notes that Tanabe discloses a particle accelerator having a drift tube connected to and extending between a first accelerating section and a second accelerating section. The Office Action concludes that it would have obvious to a person having ordinary skill in the art at the time the invention was made to employ the tube as taught by Tanabe into the Mishin type particle accelerator.

In response to the Office Action's rejection of Claims 1, 3 and 4, Applicants have amended Claim 1 to claim that the waveguide of Applicants' invention has a wall at least partially physically interposed between the first and second accelerating sections and that a 3 dB waveguide hybrid junction is formed at least partially from the wall. Applicants have further amended Claim 1 to claim that the 3 dB waveguide hybrid junction defines a coupling window in the same wall. By forming the waveguide and the 3 dB waveguide hybrid junction from a common wall, Applicants' particle accelerator is more compact in size than many, if not all, conventional particle accelerators. Applicants submit that neither Mishin nor Tanabe, alone or in combination, appear to disclose or render obvious Applicants' claimed particle accelerator having such a wall and 3 dB waveguide hybrid junction. Therefore, Applicants contend that amended

Claim 1 includes elements and/or limitations that are patentably distinct over Mishin and Tanabe, alone or in combination, and that, as a consequence, amended Claim 1 is allowable.

Applicants also contend that Claims 3 and 4 are dependent from amended independent Claim 1 and, thus, include all of the elements and/or limitations of amended independent Claim 1. Additionally, Applicants note that Claims 3 and 4 include patentably distinct elements and/or limitations of their own. For at least these reasons, Applicants argue that Claims 3 and 4 are also allowable over Mishin and Tanabe, alone or in combination.

Second, the Office Action objected to Claims 2 and 5 "as being dependent upon a rejected base claim", but noted that Claims 2 and 5 "would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims." Responsive thereto, Applicants have, respectively, rewritten Claims 2 and 5 in independent form including all of the limitations of the base claim and any intervening claims as required by the Office Action. Applicants submit that rewritten Claims 2 and 5 are now allowable.

Third, the Office Action noted that Claims 6 and 7 are allowed as written. Applicants thank the Examiner for allowing Claims 6 and 7. However, during preparation of the present response, Applicants noticed a clerical error in Claim 6 in that the word "section" was missing in an obvious reference to the first accelerating section in the clause pertaining to the 3 dB waveguide hybrid junction. Therefore, Applicants have amended Claim 6 to insert the word "section" after the words "first accelerating" as indicated above in the claims portion of this response, thereby resolving this obvious clerical error. Applicants note that no new subject matter has been added to Claim 6 by virtue of this amendment and submit that amended Claim 6 is still allowable over the art of record.

In addition to addressing the issues raised by the Office Action, Applicants have added new Claim 8 to the present patent application in order to claim that the tube connected to and extending between the first and second accelerating sections of Applicants' particle accelerator is defined within the wall of amended Claim 1 that is common to both the waveguide and 3 dB waveguide hybrid junction. Applicants submit that the limitations of new Claim 8 are not

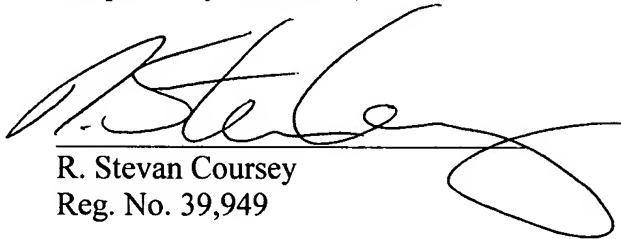
anticipated or rendered obvious by the art of record and, therefore, that new Claim 8 is allowable.

Applicants note that by virtue of this response, the present patent application now includes four independent claims and eight total claims. Therefore, Applicants have enclosed Check No. 1126 in the amount of \$100.00 in payment of the fee due under 37 CFR §1.16(h) for one extra independent claim.

CONCLUSION

In view of the amendments submitted herein and the above remarks, it is believed that the present patent application has been placed in condition for allowance. Thus, Applicants earnestly solicit early and favorable action. In the event that the Examiner has any questions or requires additional information pertaining to the present patent application, the Examiner is urged to contact Applicants' undersigned attorney.

Respectfully submitted,



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